What is claimed is:

1. A venous cannula adapted for retrograde administration of cardioplegia solution to a heart and simultaneous venous drainage from a vena cava during cardiopulmonary bypass comprising:

a cardioplegia solution infusion mechanism, wherein the cardioplegia solution infusion mechanism receives pressurized cardioplegia solution and routes the pressurized cardioplegia solution into a coronary sinus, located in a right atrium of a heart, without cannulating the coronary sinus;

a venous blood drainage mechanism, wherein the venous blood drainage mechanism drains venous blood from a superior and an inferior vena cava;

a vena cava occlusion mechanism, wherein the vena cava occlusion mechanism occludes the vena cava from the right atrium to prevent pressurized cardioplegia solution from entering the vena cava; and

a protection device, wherein the protection device limits pressurization of the right atrium by the pressurized cardioplegia solution.

2. The cannula of Claim 1, wherein said cardioplegia solution infusion mechanism comprises an attachment to a source of pressurized cardioplegia solution, an infusion lumen disposed within a length of axially elongate multi-lumen tubing, and a cardioplegia infusion port.

3. The cannula of Claim 1, wherein said venous blood drainage mechanism comprises an attachment to a drainage collection system, a drainage lumen disposed within a length of axially elongate multi-lumen tubing, and a plurality of drainage ports.

4. The cannula of Claim 1, wherein said vena cava occlusion mechanism comprises an attachment to a source of pressurized fluid, a first

occlusion device, a second occlusion device and at least one occlusion enabling lumen disposed within a length of axially elongate multi-lumen tubing.

5. The cannula of Claim 1 wherein the protection device comprises an inner and an outer wall and a vacuum channel.

6. The cannula of Claim 1 wherein the protection device comprises a cardioplegia delivery channel.

7. The cannula of Claim 5 wherein the protection device comprises perforations that enable a vacuum to form between the protection device and tissues of the right atrium.

8. The cannula of Claim 5 wherein the protection device comprises ridges to prevent collapse of the protection device under a vacuum.

9. The cannula of Claim 1 wherein said protection device is an expandable structure that becomes rigid upon full expansion.

10. A method of cannulating a patient's heart during cardiopulmonary bypass comprising:

inserting a cannula into a venous system of a patient;

positioning the cannula so that said cannula traverses a right atrium and extends into both a superior and an inferior vena cava;

enabling an occlusion device in each of the superior and inferior vena cava;

draining venous blood from the vena cava

inflating a protection balloon within the right atrium and;

infusing cardioplegia solution, in the retrograde direction, into a coronary sinus of the heart, without cannulating the coronary sinus, wherein the cardioplegia solution is infused through the cannula into the coronary sinus.

11. The method of Claim 10 further comprising orienting the protection balloon so that a cardioplegia delivery channel is directed at and is in fluid communication with, and creates a seal around, the coronary sinus.

12. The method of Claim 10 wherein infusing cardioplegia solution does not over-pressurize the right atrium.

13. The method of Claim 10 wherein positioning the cannula comprises visualizing the cannula with an affixed radiopaque marker under fluoroscopy.

14. The method of Claim 10 wherein infusing cardioplegia solution further comprises sealing a cardioplegia delivery channel to a right atrial wall so as to block the escape of cardioplegia solution into the right atrium.

15. The cannula of Claim 1 further comprising at least one radiopaque marker to permit positioning of the cannula under fluoroscopy.

16. The cannula of Claim 15 wherein the radiopaque markers are asymmetrical and provide rotational positioning information when viewed under fluoroscopy.

17. A venous cannula adapted for retrograde administration of cardioplegia solution to a heart during cardiopulmonary bypass comprising:

a length of axially elongate multi-lumen tubing with a proximal end and a distal end, wherein at least one of the lumens is a cardioplegia solution infusion lumen;

a cardioplegia solution infusion annulus located near the distal end of the multi-lumen tubing and operably connected to the cardioplegia solution infusion lumen;

an annular seal ring surrounding the cardioplegia solution infusion annulus, wherein a vacuum lumen in the multi-lumen tubing is operably connected to the annular seal ring; and

a cardioplegia solution infusion mechanism, wherein the cardioplegia solution infusion mechanism receives pressurized cardioplegia solution from an external cardioplegia solution infusion source and delivers it to the cardioplegia solution infusion lumen.

18. The venous cannula of Claim 17, wherein said annular seal ring comprises an inner and an outer wall and a sealing annulus and wherein said annular seal ring controllably seals to the right atrial wall around the coronary sinus by way of a vacuum and prevents the escape of pressurized cardioplegia solution from the cardioplegia solution infusion annulus into the right atrium.

19. The venous cannula of Claim 17 further comprising radiopaque markers to permit positioning and visualization under fluoroscopy.

20. The venous cannula of Claim 17 wherein all components are fabricated from biocompatible materials.